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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/510,974	02/21/2000	Rex Petersen	10001834	1706

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EXAMINER	
WHITMORE, STACY	
ART UNIT	**PAPER NUMBER**
2812	

DATE MAILED: 01/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/510,974	PETERSEN ET AL.	
	Examiner	Art Unit	
	Stacy A Whitmore	2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 August 2003*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 February 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

13)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

a) ☐ The translation of the foreign language provisional application has been received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

1) ☒ *Notice of References Cited* (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☒ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

FIANL ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ginetti et al. (6,170,080) in view of Jones et al. (5,629,860).

3. As for claims 1,11 and claim 21, and 25-27, Ginetti taught the invention substantially as claimed, including A chip VLSI chip [col. 3, lines 25-32] who design was performed according to a method for VLSI chip design comprising the steps of:

(means for) estimating signal routes between functional blocks [col. 13, lines 53-56];

(means for) determining C values for the estimated signal routes [col. 14, lines 8-13]; and

(means for) building a model of said signal routes including C values [col. 14, lines] [the means for limitation is met by Ginetti's use of computer hardware and software]; and

wherein the design is in register transfer language [col. 3, lines 24-27].

Ginetti did not specifically disclose determining R values for the (estimated) signal routes and building a model of said routes with R values.

Jones disclosed determining R values for signal routes [col. 7, line 30 –col. 8, line 53; col. 10, line 65 col. 11, line 2].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Ginetti and Jones because both Ginetti and Jones disclose wiring/routing with delay/parasitic or timing concerns. Adding Jones' R value to Ginetti's means/method of estimated signal routes and model including an R

value would improve Ginetti's means/method by improving the routing delay estimation which would improve Ginetti's model of signal routes by accounting for wiring delays affected by resistance which is significant where at least high fanout is part of the circuit [see Jones, col. 7, line 30 – col. 8, line 53].

4. As for claims 2 and 12, Ginetti taught foliating nodes in estimated signal routes [fig. 15, col. 10, lines 44-52: the netlist described reads on foliating nodes because the netlist is a list of connected points along estimated routes which have unique names such as those shown in figure 15. Applicant describes foliating nodes on page 8, lines 3-4, of the specification as giving unique names to each of the different points along an estimated route].

5. As for claims 3 and 13, Ginetti taught generating a connectivity net list from said model [col. 3, lines 36-53].

6. As for claims 4 and 14, Ginetti taught said step of estimating is performed based on input of a floor plan and a connectivity description [col. 1, lines 60-67: Ginetti discloses here that the netlist (connectivity description must be used with the floorplanner so capacitance and wire load models can be done, therefore estimating is done with the floorplanner and netlist].

7. As for claims 5 and 15, Ginetti taught said step of estimating is performed in response to one or more control factor inputs [col. 13, lines 53-56; col. 12, lines 15-19; and col. 11; timing constraint files and design rule constraint file].

8. As for claims 7 and 17, Ginetti taught said step of estimating is performed based on input of signal path configuration parameters [col. 13, lines 53-56; col. 12, lines 15-19; and col. 11; timing constraint files and design rule constraint file].

9. As for claims 6, 8, 10, 16, 18, and 20, Ginetti taught the invention substantially as claimed as cited in the rejection of claims 1, 4-5, 7, 9, 11, 14-15, and 17. Ginetti did not specifically disclose that said control factor input specifies a signal routing algorithm or that said signal route configuration parameters specify one or more signal path material, physical size of signal path material or spacing.

Jones disclosed a control factor input of a signal routing algorithm and signal route control parameters that specify one or more of signal path material, physical size of signal path material or spacing [col. 5, lines 17-48].

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Ginetti and Jones because Ginetti estimates signal routes between functional blocks including control factor inputs and signal route configuration parameters that would necessarily need an algorithm in order to perform routing as well as signal route characteristics in order to estimate the routing between blocks. Therefore, adding Jones disclosure of the use of specific control factor inputs such as signal routing algorithms (such as Steiner Tree method) and signal route configuration parameters (such as metal characteristics) would be useful for Ginetti's routing estimator.

10. As for claims 9 and 19, Ginetti taught step of estimating is performed in response to one or more control factor inputs [col. 13, lines 53-56; col. 12, lines 15-19; and col. 11; timing constraint files and design rule constraint file].

11. As for claims 22-24, Ginetti taught wherein the estimating signal routes between functional blocks occurs prior to a layout for the VLSI chip design [abstract; col. 1].

12. Applicant's arguments filed 8/20/03 have been fully considered but they are not persuasive.
On pages 6-8 of the remarks applicant argues in substance:

A: Ginetti in view of Jones does not disclose a method and means for determining a value for the resistance and building a model that includes it.

Examiner respectfully disagrees for the following reasons:

As to point A: Ginetti discloses determining C values for estimated signal routes, building a model of the routes including C values. Jones disclosed determining R values for signal routes [col. 7, line 30 –col. 8, line 53; col. 10, line 65 col. 11, line 2].

Further, applicant indicates in the remarks on page 7, last paragraph, that Jones discloses resistance should be taken into account in circuit estimation. Jones is directed to wiring delay/ routing delay in the cited portions of col. 7 and 8.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of Ginetti and Jones because both Ginetti and Jones disclose wiring/routing with delay/parasitic or timing concerns. Adding Jones' R value to Ginetti's means/method of estimated signal routes and model including an R value would improve Ginetti's means/method by improving the routing delay estimation which would improve Ginetti's model of signal routes by accounting for wiring delays affected by resistance which is significant where at least high fanout is part of the circuit [see Jones, col. 7, line 30 – col. 8, line 53].

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
Lin (US Patent 6,297,554) shows the importance of resistance on wiring, timing, delay as well as capacitance
Moslehi (US Patent 6,016,000) shows the resistance as related to timing, delay in wiring

14. THIS ACTION IS MADE FINAL. *Applicant is reminded of the extension of time* policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stacy A Whitmore whose telephone number is (571) 272-1685. The examiner can normally be reached on Monday-Thursday, alternate Friday 6:30am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on (571) 272-1679. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Stacy A Whitmore
Primary Examiner
Art Unit 2812

SAW

January 8, 2004